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Title: IP MOBILITY MECHANISM FOR A PACKET RADIO NETWORK



April 16, 2001

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PRELIMINARY AMENDMENT

Hon. Commissioner of Patents
Washington, D.C. 20231

Sir:

Kindly preliminary amend the above-referenced application as follows:

IN THE CLAIMS:

Please enter the following amended claims 1-11:

1. (Amended) A method for providing Internet Protocol-type mobility for at least one mobile station in a packet radio network including at least one support node configured to act as a gateway support node configured to interface with at least one external network, the gateway support node being configured to support at least an Internet Protocol-type protocol, the method comprising:

integrating, into the at least one gateway support node, a home agent configured to route data packets at least one of to and from the at least one mobile station;

supplementing the Internet Protocol-type protocol with an extension for mobility management of the at least one mobile station.

2. (Amended) The method of claim 1, wherein the at least one gateway support node includes a protocol stack configured to support at least a layer one protocol, a layer two protocol, and a network layer protocol, the Internet Protocol-type protocol residing on the network layer, and the extension for mobility management is a Mobile IP protocol.

3. (Amended) The method of claim 2, further comprising:
routing Internet Protocol data packets at least one of to and from the integrated home agent and gateway support node using only the network layer protocol and the layer two and layer one protocols.

4. (Amended) The method of claim 1, wherein the packet radio network further comprises a foreign agent and a serving support node configured to support mobility management of the at least one mobile station.

5. (Amended) The method of claim 4, further comprising integrating the foreign agent into at least one serving support node.

6. (Amended) The method of claim 4, further comprising integrating the foreign agent into the at least one gateway support node.

7. (Amended) A packet radio network for providing mobility service to at least one mobile station, the packet radio network comprising:

at least one support node configured to act as a gateway support node configured to interface with at least one external network, the gateway support node configured to support at least an Internet Protocol-type protocol; and

a home agent configured to route data packets at least one of to and from the at least one mobile station, the home agent being integrated with the gateway support node;

wherein the Internet Protocol-type protocol includes or is associated with an extension for mobility management of the at least one mobile station.

8. (Amended) The packet radio network of claim 7, further comprising:

at least one support node configured to act as a serving support node configured to support mobility management of the at least one mobile station; and

a foreign agent integrated into one of the at least one support nodes.

9. (Amended) The packet radio network of claim 8, wherein the foreign agent is integrated into the at least one serving support node.

10. (Amended) A gateway support node for a packet radio network configured to provide mobility service for at least one mobile station, wherein:

the gateway support node is configured to be interoperable with at least one serving support node to route data packets at least one of to and from the at least one mobile station;

the gateway support node is configured to support at least an Internet Protocol-type protocol that includes or is associated with an extension for mobility management of the at least one mobile station; and

the gateway support node is configured to provide functions of the gateway support node and a home agent configured to route data packets at least one of to and from the at least one mobile station.

11. (Amended) A method of using a gateway support node as a home agent that provides mobility service for at least one mobile station in a packet radio network, the method comprising:

supporting at least an Internet Protocol-type protocol that includes or is associated with an extension for mobility management of the at least one mobile station, wherein supporting is performed by the gateway support node.

See the attached Appendix for the changes made to effect the above claims.

REMARKS

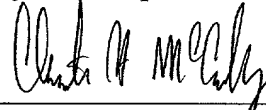
Claims 1-11 are pending. By this preliminary amendment, claims 1-11 have been amended to merely clarify the recited subject matter. Claims 1, 7, 10 and 11 are independent claims.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached Appendix is captioned **"Version with markings to show changes made"**.

Early and favorable action on the merits are respectfully requested.

Respectfully submitted,

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Enclosure: Appendix

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please amend claims 1-11 as follows:

1. (Amended) A method for providing Internet Protocol-type[, or IP-type,] mobility for [a] at least one mobile station [(MS)] in a packet radio network [comprising:] including at least one support node [(GGSN, SGSN);] configured to act as [at least one support node being] a gateway support node [(GGSN) for interfacing] configured to interface with at least one external network [networks (11)], [said] the gateway support node [supporting] being configured to support at least an [IP-type] Internet Protocol-type protocol, the method comprising: [; c h a r a c t e r i z e d b y integrating, into [said] the at least one gateway support node [(GGSN)], a home agent [(HA) for routing] configured to route data packets at least one of to and from the [to/from said] at least one mobile station; supplementing [said IP-type] the Internet Protocol-type protocol with an extension for mobility management of [said] the at least one mobile station.

2. (Amended) [A] The method [according to] of claim 1, [c h a r a c t e r i z e d in that said] wherein the at least one gateway support node [comprises] includes a protocol stack [(18, 20) for supporting] configured to support at least a layer one [1 (L1)] protocol, a layer two [2 (L2)] protocol, and a network layer [(L3)] protocol, [and that said IP-type] the Internet Protocol-type protocol [resides] residing on [said] the network layer [(L3);], and [said] the extension for mobility management is [substantially] a Mobile IP protocol.

3. (Amended) [A] The method [according to] of claim [1] 2,
[c h a r a c t e r i z e d b y] further comprising:
routing [IP] Internet Protocol data packets at least one of to and from
[to/from said] the integrated home [agent/gateway] agent and gateway support node
[(GGSN+HA)] using only the network layer [(L3)] protocol and the layer two[2] and
layer [1] one protocols.

4. (Amended) [A] The method of claim 1, [c h a r a c t e r i z e d i n t h a t]
wherein the packet radio network further comprises a foreign agent [(FA)] and a
serving support node [(SGSN), known per se, for supporting] configured to support
mobility management of the at least one mobile station [(MS)]; and that the foreign
agent (FA) is integrated into at least one support node (SGSN, GGSN)].

5. (Amended) [A] The method [according to] of claim 4,
[c h a r a c t e r i z e d b y] further comprising integrating the foreign agent [(FA)] into
at least one serving support node [(SGSN)].

6. (Amended) [A] The method [according to] of claim 4,
[c h a r a c t e r i z e d b y] further comprising integrating the foreign agent [(FA)] into
the at least one gateway support node [(GGSN)].

7. (Amended) A packet radio network for providing mobility service to [a] at
least one mobile station [(MS)], the packet radio network comprising:

at least one support node [(GGSN, SGSN) wherein at least one support node is] configured to act as a gateway support node [(GGSN) for interfacing] configured to interface with at least one external [networks (11)] network, [said] the gateway support node [supporting] configured to support at least [IP-type] an Internet Protocol-type protocol; and

[the packet radio network being characterized by an integrated network element (GGSN+HA) comprising the functions of the gateway support node (GGSN) and] a home agent [(HA) for routing] configured to route data packets [to/from] at least one of to and from the at least one mobile station, the home agent being integrated with the gateway support node;

wherein [said IP-type] the Internet Protocol-type protocol [comprises] includes or is associated with an extension for mobility management of [said] the at least one mobile station.

8. (Amended) [A] The packet radio network [according to]of claim 7, [characterized in that the packet radio network comprises] further comprising:

[a foreign agent (FA) and] at least one support node configured to act as a serving support node [(SGSN), known per se, for supporting] configured to support mobility management of the at least one mobile station [(MS)]; and

[that the] a foreign agent [(FA) is] integrated into one of the at least one support nodes[node (SGSN, GGSN)].

9. (Amended) [A] The packet radio network [according to] of claim [7] 8,
[c h a r a c t e r i z e d in that] wherein the foreign agent [(FA)] is integrated into the
at least one serving support node [(SGSN)].

10. (Amended) A gateway support node [(GGSN+HA)] for a packet radio
network[, arranged] configured to provide mobility service for [a] at least one mobile
station [(MS)], wherein:

the gateway support node [(GGSN+HA)] is configured to be
interoperable with at least one serving support node [(SGSN), for routing] to route
data packets [to/from] at least one of to and from the at least one mobile station
[(MS)];

the gateway support node is configured to support [supports] at least
[IP-type] an Internet Protocol-type protocol that includes or is associated with an
extension for mobility management of the at least one mobile station; and

the gateway support node is configured to provide [being
c h a r a c t e r i z e d by comprising the] functions of the gateway support node
[(GGSN)] and a home agent [(HA) for routing] configured to route data packets at
least one of to and from the at least one[to/from the] mobile station[;

wherein said IP-type protocol comprises or is associated with an extension for
mobility management of said mobile station].

11. (Amended) A method of using [Use of] a gateway support node
[(GGSN)] as a home agent [(HA) for providing] that provides mobility service for at
least one [a] mobile station [(MS)] in a packet radio network, the method comprising:

[wherein the gateway support node supports] supporting at least an [IP-type] Internet Protocol-type protocol[, and said IP-type protocol comprises] that includes or is associated with an extension for mobility management of [said] the at least one mobile station, wherein supporting is performed by the gateway support node.